CLAIMS:

What is claimed is:

1. A method for routing packets in a multipath network of nodes, each packet having a routing in the network determined by a directed-graph index, comprising:

accessing a tag of a packet at a first node;

determining a second node by using the tag to access a routing bias table;

calculating an updated tag from the tag;

replacing the tag of the packet with the updated tag to give an updated packet; and

routing the updated packet from the first node to the second node.

2. The method of claim 1, wherein the second node is a destination node.

3. The method of claim 1, further comprising:

accessing a tag of the updated packet at the second node;

determining a third node by using the tag of the updated packet to access a second routing bias table;

calculating a second updated tag from the tag of the updated packet;

replacing the tag of the updated packet with the second updated tag to give a second updated packet; and

routing the second updated packet from the second node to the third node.

4. The method of claim 3, wherein the third node is a destination node.

5. The method of claim 1, wherein the directed-graph index determines at least one destination node.

6. The method of claim 5, wherein determining a second node includes:

accessing a directed-graph index of the packet at the first node;

calculating a normalized tag from the tag; and

determining an element of a successor set by using the normalized tag to access the routing bias table, wherein

the routing bias table is selected from a plurality of routing bias tables indexed by the first node and the directed-graph index, and

the routing bias tables satisfy an acyclic property.

7. The method of claim 6, wherein calculating a normalized tag includes evaluating a normalizing function that is used substantially throughout the network.

8. The method of claim 7, wherein

the tag includes a plurality of bits included in the packet; and

the normalizing function enhances network performance by limiting bit operations in accessing the routing bias table.

9. The method of claim 1, wherein calculating an updated tag includes evaluating an updating function that is used substantially throughout the network.

10. The method of claim 9, wherein the updating function enhances network performance by randomizing packet routings.

11. The method of claim 10, wherein the routing bias table enhances network performance by allowing local preferences for routings.

12. The method of claim 8, wherein calculating an updated tag includes evaluating an updating function that is used substantially throughout the network.

13. The method of claim 12, wherein the updating function enhances network performance by randomizing packet routings.

14. The method of claim 13, wherein the routing bias table enhances network performance by allowing local preferences for routings.

15. The method of claim 14, wherein,

for two packets having a common entry node, a common directed-graph index, and a common entry tag at the common entry node, an arrival sequence of the two packets at the

common entry node is equivalent to an arrival sequence of the two packets at a common destination node;

the common entry node defines an identical entry for the two packets into the network;

the common destination node defines an identical destination for the two packets in the network; and

the common entry tag at the common entry node defines an identical tag provided to each of the two packets before arrival at the common entry node.

16. The method of claim 1, wherein,

for two packets having a common entry node, a common directed-graph index, and a common entry tag at the common entry node, an arrival sequence of the two packets at the common entry node is equivalent to an arrival sequence of the two packets at an intermediate node;

the common entry node defines an identical entry for the two packets into the network;

the common directed-graph index defines an identical routing for the two packets in the network; and

the common entry tag at the common entry node defines an identical tag provided to each of the two packets before arrival at the common entry node.

17. The method of claim 16, wherein,

the common entry tag is calculated by operation of a hash function on a selection of bits belonging to either of the two packets.

18. A method for routing flows in a multipath network of nodes, each flow including a sequence of packets, each flow having a flow entry node and a flow directed-graph index, and each packet including a tag, comprising:

marking packets belonging to a flow with a flow entry tag before entry into the network at a flow entry node;

routing packets in the network by using the tags of packets to access entries in a plurality of routing bias tables;

changing tags of packets in the network so that the packets of a flow receive an identical tag when being routed to an identical node.

19. The method of claim 18, wherein changing tags of packets includes:

accessing a tag of a packet at a first node;

determining an updated tag from the tag; and

replacing the tag of the packet with the updated tag to give an updated packet;

20. The method of claim 19, wherein routing packets includes:

determining a second node by using the tag to access a first routing bias table selected from the plurality of routing bias tables; and

routing the updated packet from the first node to the second node.

21. The method of claim 20, wherein

the routing bias tables are indexed by a first node and a directed-graph index; and

the routing bias tables satisfy an acyclic property.

22. The method of claim 21, wherein determining a second node includes:

accessing a directed-graph index of the packet;

calculating a normalized tag from the tag; and

determining an element of a successor set by using the normalized tag to access the first routing bias table.

23. The method of claim 22, wherein calculating a normalized tag includes evaluating a normalizing function that is used substantially throughout the network.

24. The method of claim 23, wherein

the tag includes a plurality of bits included in the packet; and

the normalizing function enhances network performance by limiting bit operations in accessing the first routing bias table.

25. The method of claim 21, wherein calculating an updated tag includes evaluating an updating function that is used substantially throughout the network.

26. The method of claim 25, wherein the updating function enhances network performance by randomizing packet routings.

27. The method of claim 26, wherein the routing bias tables enhance network performance by allowing local preferences for routings.

28. The method of claim 24, wherein calculating an updated tag includes evaluating an updating function that is used substantially throughout the network.

29. The method of claim 28, wherein the updating function enhances network performance by randomizing packet routings.

30. The method of claim 29, wherein routing bias tables enhance network performance by allowing local preferences for routings.

31. The method of claim 30, wherein an arrival sequence of two packets of a given flow at the common entry node of the given flow is equivalent to an arrival sequence of the two packets at an intermediate node of the given flow.

32. The method of claim 18, wherein an arrival sequence of two packets of a given flow at the common entry node of the given flow is equivalent to an arrival sequence of the two packets at an intermediate node of the given flow.

33. The method of claim 18, wherein the directed-graph index determines at least one destination node.

34. The method of claim 18, wherein,

the flow entry tag of a flow is calculated by operation of a hash function on a selection of bits belonging to a packet of the flow.